CORVALLIS
ENHANCING COMMUNITY LIVABILITY

Permit to Pipe and Convert a Roadside Ditch to a "French Drain"

This permit to pipe and back-fill a roadside ditch, under the terms and conditions attached, is issued to:

Property Owner's Name_____

For property located at : _____

Issued on this date: _____

This permit expires upon 120 days from the issue date above.

Issued by: _____ Title: _____

_____ _____

Property Owner's Signature Date

Terms and Conditions:

All costs related to the piping and back-filling shall be paid by the property owner, including the permit fee and all future repair and maintenance of the piped ditch adjacent to the property. The property owner, and any subsequent property owner, assumes liability for any damages or injuries that may result from improper installation or maintenance of the piped ditch, including localized flooding on private property.

The permit fee shall be the same as a plumbing permit (currently $100).

The inspection services shall be performed by Public Works Utilities Division. Call 766-6916 to request an inspection. Two inspections shall be done: the first to inspect pipe type, bedding and back-fill up to the springline; the second after the final back fill of rock.

The piping material shall be perforated pipe and comply with AASHTO M252 or 294 standards, and/or ODOT Specification 00430.00, as applicable.

Installation shall consist of the properly sized pipe laid at the proper grade and shall comply with:

- manufacturer's recommendations, including using the proper connectors to existing piping such as concrete driveway culverts;
- direction from Corvallis Public Works;
- and in as much as possible, in accordance with ASTM D 2321, Standard Practice for Underground Installation of Polyethylene pipe for Sewers and Other Gravity-Flow Applications.

The pipe shall be bedded on a backfill foundation and up to the springline on the pipe (the haunching areas) in Class I, 3/4"minus crushed rock but the final backfill and cover shall be shall be round, open rock, Class II material (1 ½" to 2 1/2") compacted to a density of approximately 85%, which is typically achieved by hand tamping. See attached drawing labeled “Open Ditch Installation” to determine the bedding and fill to the springline. Care shall be exercised to avoid crushing or deforming the pipe. Any exposed end of the pipe shall be anchored with Class 20-25 lb quarry rock to prevent the pipe from moving and to minimize erosion at the pipe end. Optionally, the pipe may also be anchored with mechanical anchors such as bent rebar driven into competent soil or attached to precast weights.

Roof or foundation drains may be connected to the pipe using required fittings, or may be terminated in the ditch without making a connection to the pipe, using the ditch system as a French drain. If these drains are not attached to the pipe, they shall terminate in the trench in a way as to minimize erosion of fine aggregates into the pipe (i.e. 90 degree fitting pointing down, or drain end cap, etc.).

City of Corvallis Public Works
Policy on Piping of Roadside Ditches

Unimproved streets typically do not have well designed, piped, underground drainage systems consisting of curb and gutter, catch-basins, manholes, clean-outs, and piped lines. Roadside ditches are provided to channel surface water away from the street and roadbed and provide a surface drainage facility for the adjacent properties to reduce the likelihood of localized flooding. Roadside ditches also present a road hazard to vehicles leaving the roadway especially if the ditch banks are steep and they potentially present a health hazard by providing a breeding area for mosquitoes. Roadside ditches are easier and less expensive to maintain than piped systems.

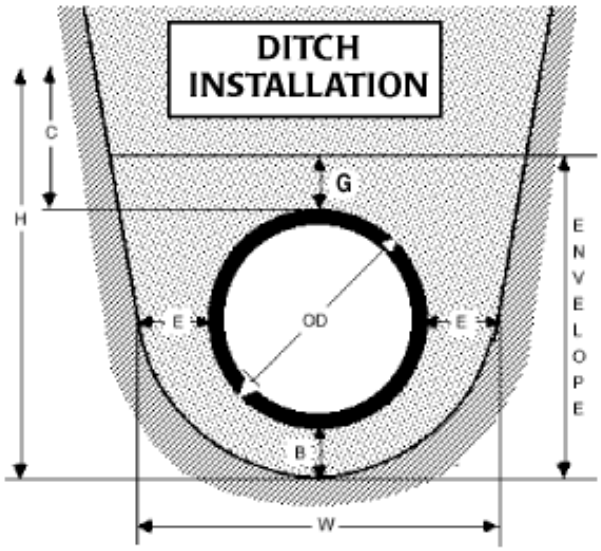
Some property owners, desiring to eliminate the roadside and potential health hazard, request that the ditch be piped and back-filled. The City does not have a funding source for this purpose. The Corvallis engineering standards for structured roadside drainage facilities are either a roadside ditch, or curb and gutter and piped drainage facility including curb inlets or other catch-basin facilities, pipes manholes, etc. Fully improved drainage facilities consisting of curb and gutter and piped systems are preferred to roadside ditches but typically require full street improvements to urban standards. To accommodate private property owner's desire to pipe and back-fill roadside ditches and provide road drainage, the Public Works Department has established and will administer a permitting process establishing design and material and installation guidelines to be used by the property owner.

The covered pipe/ditch is inferior in function as a roadway drainage system to either a roadside ditch or fully designed piped system and as permitted by this action, not intended to be used as a parking area or other load-bearing roadway surface. The installation is intended to function as closely as possible as a drainage facility to that of an open ditch. The future maintenance of the filled ditch shall be assumed by the adjacent property owner.

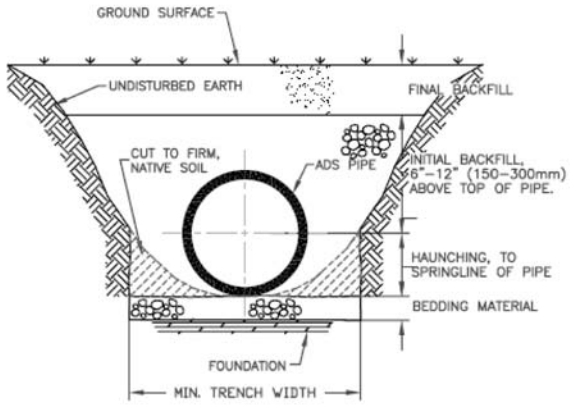
ENVELOPE & TRENCH DIMENSIONS

		B	C	H	E	W	G
Pipe Size	**Pipe OD (Nominal)**	**Bed Depth Class I Material**	**Minimum Cover** (1)	**Minimum Trench Depth (OD+B+C) (1) (OD+B+G) (2)**	**Envelope Width**	**Minimum Trench Width (OD+2E)**	**Backfill Over Pipe** (2)
3	3.6	4 - 6	12	16 - 20 10 - 14	2-3	8	6
4	4.6	4 - 6	12	17 - 21 11 - 15	3-4	10	6
5	5.7	4 - 6	12	18 - 22 12 - 16	3-4	12	6
6	6.8	4 - 6	12	19 - 23 13 - 17	4-6	14	6
8	9.5	4 - 6	12	22 - 26 16 - 20	4-6	20	6
10	11.6	4 - 6	12	24 - 28 18 - 22	5-8	24	6
12	14.2	4 - 6	12	26 - 30 20 - 24	5-8	30	6
15	17.7	4 - 6	12	30 - 34 24 - 28	5-8	34	6
18	22.0	4 - 6	12	34 - 38 28 - 32	6-10	38	8
24	29.5	4 - 6	12	42 - 46 38 - 40	8-12	46	10

(1) - load bearing applications. (2) - no-load bearing applications. All measurements are in inches.



OPEN DITCH INSTALLATION



OPEN DITCH INSTALLATION
TYPICAL CROSS–SECTION
(N.T.S.)

NOTES:

1. FOUNDATION: WHERE THE TRENCH BOTTOM IS UNSTABLE, THE CONTRACTOR SHALL EXCAVATE TO A DEPTH REQUIRED BY THE ENGINEER AND REPLACE WITH A FOUNDATION OF CLASS I OR II MATERIAL AS DEFINED IN ASTM D2321, "STANDARD PRACTICE FOR INSTALLATION OF THERMOPLASTIC PIPE FOR SEWERS AND OTHER GRAVITY–FLOW APPLICATIONS," LATEST EDITION; AS AN ALTERNATIVE AND AT THE DISCRETION OF THE ENGINEER, THE TRENCH BOTTOM MAY BE STABILIZED USING A WOVEN GEOTEXTILE FABRIC.

2. BEDDING: SUITABLE MATERIAL SHALL BE CLASS I, II OR III AND INSTALLED AS REQUIRED IN ASTM D2321, LATEST EDITION.

   UNLESS OTHERWISE SPECIFIED BY THE ENGINEER, MINIMUM BEDDING THICKNESS SHALL BE 4" (100mm) FOR 4"–24" (100–600mm) CORRUGATED POLYETHYLENE PIPE (CPEP); 6" (150mm) FOR 30"–60" (750–1500mm) CPEP.

3. HAUNCHING AND INITIAL BACKFILL: SUITABLE MATERIAL SHALL BE CLASS I, II OR III AND INSTALLED AS REQUIRED IN ASTM D2321, LATEST EDITION.

4. UNLESS OTHERWISE SPECIFIED BY THE ENGINEER, MINIMUM TRENCH WIDTHS SHALL BE AS FOLLOWS:

NOMINAL ø in (mm)	MIN. RECOMMENDED TRENCH WIDTH, in (mm)
4 (100)	21 (530)
6 (150)	23 (580)
8 (200)	25 (630)
10 (250)	28 (710)
12 (300)	31 (790)
15 (375)	34 (860)
18 (450)	39 (990)
24 (600)	48 (1220)
30 (750)	66 (1680)
36 (900)	78 (1980)
42 (1050)	83 (2110)
48 (1200)	89 (2260)
60 (1500)	102 (2590)

5. MINIMUM COVER: MINIMUM RECOMMENDED DEPTHS OF COVER FOR VARIOUS LIVE LOADING CONDITIONS ARE SUMMARIZED IN THE FOLLOWING TABLE. UNLESS OTHERWISE NOTED, ALL DIMENSIONS ARE TAKEN FROM THE TOP OF PIPE TO THE GROUND SURFACE.

SURFACE LIVE LOADING CONDITION	MINIMUM RECOMMENDED COVER, in (mm)
H25 (FLEXIBLE PAVEMENT)	12 (300), 24 (600) FOR 60" (1500) PIPE*
H25 (RIGID PAVEMENT)	12 (300), 24 (600) FOR 60" (1500) PIPE
E80 RAILWAY	24 (600)
HEAVY CONSTRUCTION	48 (1200)

*TOP OF PIPE TO BOTTOM OF BITUMINOUS PAVEMENT SECTION

NOTE TO THE ENGINEER: WHEN THIS DETAIL IS TO BE INCORPORATED INTO CONTRACT DOCUMENTS, PLEASE REFERENCE SECTION X–2, "RECOMMENDATIONS FOR INCORPORATION INTO CONTRACT DOCUMENTS" OF ASTM SPECIFICATION D2321, "STANDARD PRACTICE FOR UNDERGROUND INSTALLATION OF THERMOPLASTIC PIPE FOR SEWERS AND OTHER GRAVITY–FLOW APPLICATIONS" SO THAT APPROPRIATE MODIFICATIONS CAN BE MADE TO ACCOMMODATE SITE SPECIFIC NEEDS.

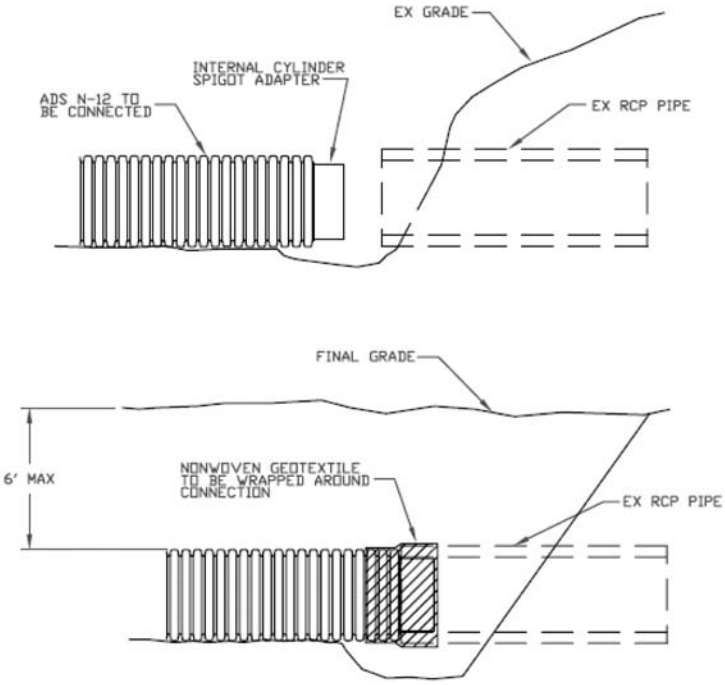
ADS
ADVANCED DRAINAGE SYSTEMS, INC.

DRAWN BY	APPROVED BY	DRAWING #
K.M.J. 5-7-99	P.X.C. 5-7-99	STD-102

REVISIONS	
BY	DATE

DISSIMILAR MATERIALS ADAPTER

DETAIL IS APPLICABLE FOR JOINING ADS N-12 TO RCP UNDER SHALLOW COVER, LESS THAN 6' DEEP AND NO LIVE LOADING



NOTES

1. EXISTING GRADE TO BE EXCAVATED IN SUCH A MANNER TO PROVIDE A SAFE WORK AREA.
2. INTERNAL CYLINDER ADAPTER TO BE WELDED TO ADS N-12, OUTSIDE DIAMETER TO BE INSERTED INTO INSIDE DIAMETER OF CONCRETE PIPE.
3. AREA UNDER CONNECTION MUST BE OVEREXCAVATED TO ALLOW AMPLE WORK AREA TO WRAP NON-WOVEN GEOTEXTILE.
4. NON-WOVEN GEOTEXTILE TO BE WRAPPED AROUND CONNECTION WITH FULL SEAM OVERLAP TO PROVIDE FULL PROTECTION FROM SOIL INTRUSION.
5. CONNECTION AND PIPE TO BE BACKFILLED PER ASTM D2321.
6. IN LIEU OF AN INTERNAL CYLINDER, AN ADS WATERTIGHT REPAIR COUPLER CAN BE USED TO CONNECT ADS N-12 TO RCP.
7. INTERNAL CYLINDER ADAPTER IS NOT RECOMMENDED FOR DOWNSTREAM CONNECTIONS.

NOTE: ALL DIMENSIONS ARE NOMINAL

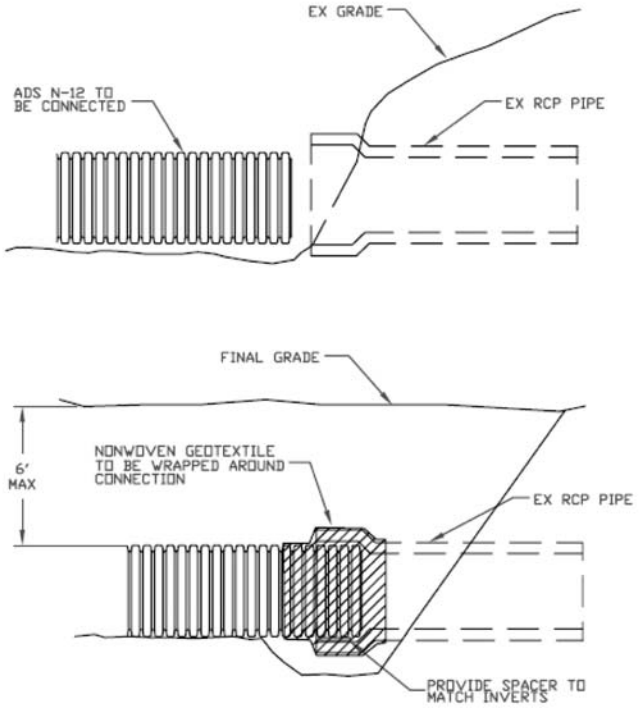
ADVANCED DRAINAGE SYSTEMS, INC.

DRAWN BY	APPROVED BY	DRAWING #
K.M.J.	P.X.C.	STD-601

REVISIONS	
BY	DATE

DISSIMILAR MATERIALS ADAPTER

DETAIL IS APPLICABLE FOR JOINING ADS N-12 TO RCP BELL END UNDER SHALLOW COVER, LESS THAN 6' DEEP AND NO LIVE LOADING



NOTES

1. EXISTING GRADE TO BE EXCAVATED IN SUCH A MANNER TO PROVIDE A SAFE WORK AREA.
2. SPACER OR SHIM TO BE PROVIDED IN BELL TO ALLOW MATCHING OF INVERTS.
3. AREA UNDER BELL CONNECTION MUST BE OVEREXCAVATED TO ALLOW AMPLE WORK AREA TO WRAP NON-WOVEN GEOTEXTILE.
4. NON-WOVEN GEOTEXTILE TO BE WRAPPED AROUND CONNECTION WITH FULL SEAM OVERLAP TO PROVIDE FULL PROTECTION FROM SOIL INTRUSION.
5. CONNECTION AND PIPE TO BE BACKFILLED PER ASTM D2321.

NOTE: ALL DIMENSIONS ARE NOMINAL

ADVANCED DRAINAGE SYSTEMS, INC.

DRAWN BY	APPROVED BY	DRAWING #
K.M.J.	P.X.C.	STD-603

REVISIONS	
BY	DATE

CORVALLIS
ENHANCING COMMUNITY LIVABILITY

Permit to Pipe and Convert a Roadside Ditch to a "French Drain"

Property owner: _____

Site address: _____

Issue date of permit: _____

Inspection record

Inspection of pipe bedding/springline fill: Date_____ By:_____
Comments:
_____
_____
_____

Follow-up inspection: Date_____ By:_____
Comments:
_____
_____
_____

Follow-up inspection: Date_____ By:_____
Comments:
_____
_____
_____

Final inspection: Date_____ By: _____
Comments:_____
_____
copy sent to property owner? no ___ yes_____ Date _____

Note: final inspection is required within 120 days from permit issuance date.